

# Per- and Polyfluoroalkylated Substances (PFAS)

## ISSUE

Per- and polyfluoroalkylated substances (PFAS) are a large family of man-made, globally-distributed chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) and GenX, and are persistent in the environment. PFAS chemicals—primarily PFOA and PFOS, but also others—have been used widely in consumer products, firefighting foams, and in industrial processes. PFAS chemicals have been detected at sites across the country, often in drinking water or potential drinking water sources. There is substantial concern about the effects of PFAS on public health.

## CURRENT STATUS AND ISSUES

- Most people have been exposed to PFAS chemicals because they have been used in many consumer products and because they do not break down in the environment. Human exposure to PFAS occurs through multiple ingestion pathways including contaminated food, house dust, and drinking water.
- Certain PFAS chemicals, including PFOA and PFOS, are no longer manufactured in the U.S. as a result of voluntary phase-outs and EPA's 2010/2015 PFOA Stewardship Program, but they are still produced around the world and continue to be imported in consumer goods.
- Scientists at the Centers for Disease Control and Prevention (CDC) have found PFOA and PFOS in the blood of nearly all the people they tested (98% of 2,094 nationwide participants from 2011 to 2012).
- These studies have shown that the levels of PFOA and PFOS in blood have been decreasing since companies stopped producing these chemicals, but information on concentrations of other PFAS chemicals in humans, which are being used as alternatives, is lacking.
- EPA Offices and Regions (and other federal agencies) are learning more about the toxicity of PFAS chemicals as well as developing and validating necessary analytical methods to better understand PFAS exposures in communities.
- In 2016, EPA established non-regulatory health advisories for PFOA and PFOS in drinking water of 70 parts per trillion (ppt) combined. The health advisories identified the concentration of PFOA and PFOS in drinking water at or below which adverse health effects are not anticipated to occur for short-term and lifetime exposures.
- Other PFAS chemicals, which are extremely persistent in the environment, generally lack quantitative toxicity information and validated analytical methods. The lack of information and methods makes it difficult for EPA Offices and Regions to make evidence-based decisions regarding potential human health risks from ongoing or future exposures.
- There are geographical hotspots where exposures are higher than in the general population (e.g. Twin Cities, MN; Parkersburg, WV/Mid-Ohio Valley; Decatur, AL; Hoosick Falls, NY).
- There is limited commercial and/or government laboratory capacity to analyze samples, especially with the growing number of investigations nationwide.
- There is concern about the effects of PFAS on public health based on human and animal studies on PFOA and PFOS, including increased cholesterol levels, low infant birth weights, effects on the immune system, thyroid hormone disruption, and an increased risk for kidney and testicular cancer. There is also concern for potential reproductive and life stage health risks for sensitive populations, including pregnant mothers and breast-fed infants, from short-term exposures.
- EPA remains concerned about the ongoing uses of PFOA and related chemicals that are still available in existing stocks or are being newly introduced by companies not participating in the PFOA Stewardship Program.